

Plant Introduction Newsletter No. 1

Rome, November 1957

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1. Recommendations regarding FAO activities in the field of plant exploration, collection and introduction

8th Session of the FAO Conference, November 1955, para. 148

"The Conference recognized the contribution that FAO World Catalogues of Genetic Stocks of Wheat and Rice are making to plant introduction and plant breeding programs and noted the projected catalogue of coconut varieties. In this connection, it is suggested that, in view of the contribution that wild species can make to varietal improvement programs, this catalogue should cover the genus Cocos.

"The value of the seed exchange and plant introduction services of FAO was recognized, but, in view of the danger of introducing diseases along with propagating material, attention was directed to the importance of adequate safeguards. In this connection, FAO was requested to assist governments on request in arranging for making use of national plant introduction and quarantine facilities in other countries."

Informal meetings, London and Canberra, 1956

In order to consider what action FAO might take as a result of this recommendation, an informal meeting was arranged in the rooms of the Linnean Society, London, on 16/17 July 1956. Subsequently, a further informal discussion was held in the Division of Plant Industry, C.S.I.R.O., Canberra, Australia, in October 1956.

These meetings agreed that it would be desirable to attempt to bring together in a published document a statement of the scientific principles and practical techniques applicable in this subject, as well as to give an indication of the way in which international collaboration might be promoted in future, particularly in association with FAO. This document is now in the press (see item 2 of this Newsletter).

7th International Grassland Congress, New Zealand, November 1956

A special session considered this subject in relation to herbage plants and made the following recommendation:

"That this Congress recognising:

"(a) the importance of international exchange of herbage plants in the development of better pastures, especially in the tropical and semi-arid regions,

"(b) the desirability of more extensive plant exploration to increase the pool of herbage plant material available for use by plant breeders and pasture agronomists, and

"(c) the inadequacy of the information at present available about existing collections both of genetic stocks and of established varieties,

"RECOMMENDS that the Food and Agriculture Organization of the United Nations gives special attention to these problems with a view to:

"(i) compiling up to date and periodically revised lists giving basic information about recognised herbage plant varieties which are available in various countries.

"(ii) compiling similar lists indicating those institutions which maintain large strain collections of herbage plants, so that such strains may become available elsewhere, and

"(iii) facilitating international collaboration in plant exploration, collection and introduction through the interchange of information about proposed expeditions, through the services of its field officers, and through direct participation in such expeditions."

3rd FAO Regional Conference for Asia and the Far East, Bandung, Indonesia, October 1956

In the discussion of the future orientation of FAO's work in the Region, several countries requested that more attention should be devoted to plant introduction. The field excursions in Indonesia had again revealed great benefits to be derived from the exchange of plant material. Several national introduction services were in existence, but their work would be facilitated if a World Bureau of Plant Introduction could be established under the auspices of FAO. The Conference therefore requested the Organization to include the co-ordination of work on plant introduction in its future program of work.

9th Session of the European Commission on Agriculture, Rome, Italy, June 1957

"The Commission:

"Recognizing that the collection and distribution of new germ plasm of the existing and potentially new economic plants in Europe are basic to all programs concerned with increased production from arable crops, horticultural crops, and the pasture and fodder crops of the region;

"Recognizing that FAO would not have funds available for the appointment of a panel of experts to study this problem;

"Requested the Director-General nevertheless to take every opportunity to arrange a further informal exchange of views between the leading plant breeders in European countries in order to evolve a system for the initial receipt, multiplication and distribution of new germ plasm from other parts of the world, and for the participation of European countries in any project of exploration and collection which might be organized on a wider international scale;

"Recommended that FAO proceed as far as possible on the lines indicated in the discussion in consultation with other inter-European organizations and organizations of plant breeders which are also interested in this question (such as EUCARPIA, etc.) and report progress to the Tenth Session of the Commission."

9th Session of the FAO Conference, November 1957

The Conference will discuss the following item in the Program of Work of the Plant Production Branch of the Agriculture Division:-

"Promoting international action and collaboration in plant exploration, collection and introduction ..... by assisting in the organizing of special expeditions, and facilitating the general exchange and introduction of wild ecotypes and indigenous or improved varieties of crops. Promoting the maintenance of living collections and the establishment and maintenance of germ plasm banks."

2. FAO Agricultural Study: Plant Exploration, Collection and Introduction

A document with the following contents is now in the press, for publication in 1958 in English, French and Spanish:-

Chapter 1 : Introduction

Chapter 2 : History of economic crops.

Arable crops - wheat, rice, maize, sugarcane,  
tobacco, cotton, soybean

Fruit and vegetables - bananas, citrus, olives,  
dates, potatoes, tomatoes, carrots

Herbage plants - Lolium spp., Phalaris tuberosa,  
lucerne, Trifolium subterraneum

Chapter 3 : Genetical and physiological considerations.

The theory of plant introduction  
Application to herbage plants  
Genetic adaptation after introduction  
Homologous environments

Chapter 4 : Techniques in collection and introduction.

Chapter 5 : Current activities and interests.

Miscellaneous projects  
Maize in the Western Hemisphere  
FAO/CSIRO expedition, 1954  
U.S. collections in Europe, 1956  
Swedish/Australian expedition, 1956  
U.S.S.R.  
South-east Asia  
South Pacific Commission  
Far East

Chapter 6 : Receipt and maintenance of collections.

Introduction services  
Federal Plant Introduction Gardens  
Living collections and germ plasm banks  
Quarantine

Chapter 7 : International collaboration.

3. Visit of FAO Seed Distribution Officer to the United States

Mr. D. Brugère of Plant Production Branch will be in the United States from 1 to 15 December 1957 and will visit the U.S.D.A. Plant Introduction Section at Beltsville, and the Germ Plasm Banks at Denver, Colorado, and Ames, Iowa.

4. FAO Tabulated Information on Tropical and Sub-Tropical Grain Legumes

The replies which have been received in response to a questionnaire issued in 1954 have now been collated and tabulated with respect to 400 varieties of legumes of which the grain is used as human food. Brief tabulated information is given regarding: identification; source and genetic origin; morphology and habit; cultivation; resistance to adverse factors; yield and quality. This publication should be ready for distribution in 1958.

5. FAO/CSIRO herbage plant collection in the Mediterranean region

The report of this collection made by Mr. C.A. Neal-Smith of the Division of Plant Industry, C.S.I.R.O., Canberra, is available as FAO ETAP Report No. 415. The proceeds of this collection were shared between the member countries of the FAO Working Party on Mediterranean Pasture and Fodder Development and C.S.I.R.O., Australia. Observations on germination, growth habit, seed production and other characters were made by C.O. Rossetti in the multiplication gardens of the Istituto Nazionale di Genetica per la Cerealicoltura, near Rome. A report of these observations will be ready for distribution early in 1958. Seeds and tillers of this material have been distributed from Rome to agronomists and plant breeders throughout the Mediterranean basin and also in some countries of western Europe, U.S.A. and elsewhere.

6. Swedish/Australian expedition in Mediterranean countries, 1956

With the help of grants from the Royal Swedish Academy of Science, foundations and business concerns Messrs. S. Ellerström and G. Olsson visited Italy, Turkey, Greece and Yugoslavia to collect cultivated and wild material which was thought to be of potential value in the breeding of agricultural plants in Sweden. In the areas visited, there are to be found primitive and highly variable land races of the most important cereals of Sweden. This material, together with any bred varieties which were available, was included in the collection, but special attention was paid to the genera listed: Brassica, Sinapis, Beta, Hordeum, Triticum, Phleum and Dactylis. A preliminary report of this expedition was circulated as FAO Circular No. Plant Explor./1/57. Material from this collection will be available on request to FAO correspondents in due course.

Mr. D.E. Symon, of the Waite Agricultural Research Institute, Adelaide, South Australia, joined this expedition, specializing in herbage plants and giving particular attention to the Islands of the Aegean and the eastern Mediterranean generally; it was thought that these might contain certain unusual or primitive types through the mere fact of their isolation from the factors affecting the distribution and spread of plant types on the mainland. This collection of some 1,200 samples is now being grown for first inspection in the quarantine garden at the Waite Institute.

7. 9th Pacific Science Congress, Bangkok, 18 November to 9 December 1957

In a Symposium on horticultural matters at this Congress, a paper will be given by Mr. L.B. Thrower, FAO horticultural specialist in Indonesia, with regard to the potentialities for the collection and interchange of horticultural material between tropical countries.

8. South Pacific Commission

Mr. J. Barrau has been appointed as Plant Introduction Officer of the Commission (South Pacific Commission, Noumea, New Caledonia). The activities of the Commission in the field of plant collection and introduction were approved at the 8th Meeting of the South Pacific Commission Research Council. It was agreed that the Plant Introduction Officer should concentrate primarily on coffee, cacao and pepper and on a number of subsistence crops.

9. U.S.S.R.

In his paper on "The significance of world collections of the All-Union Institute of Plant Industry in general and particular problems of plant breeding" Dr. P.N. Zhukovski (1956)\* reviewed the significance of world collections to the All-Union Institute of Plant Industry, Leningrad, and indicated how this material had been used in plant breeding in the Soviet Union. It was stressed that these collections represent to only a very slight degree the great variety of the wild and cultivated forms of plants which exist in the world. "We can safely predict that great discoveries of original material for plant breeding still remain to be found" in many parts of the world. "We are suffering from a plant breeders' famine as regards original material for these crops". In his paper, Dr. Zhukovski stated, with particular reference to the production of new varieties of potatoes, that it was essential to have another expedition to Latin America to obtain varieties resistant to virus degeneration, to aggressive races of Phytophthora, to oosporosis, nematodes, Colorado beetle, Epilachna and other pests.

In a letter to FAO, Prof. Dr. H. Brücher-Erbach of the Departamento de Investigaciones Científicas, Mendoza, Argentina, stated that a fairly large Russian group under the direction of Dr. Zhukovski, plans to undertake a collection of wild material in the gene centre of northern Argentina in the southern-hemisphere summer, 1957/58.

\* ZHUKOVSKI, P.N. 1956. The significance of world collections of the All-Union Institute of Plant Industry in general and particular problems of plant breeding. Bot. J. (U.S.S.R), Vol. 41, pp. 161-71 (English translation by I. Zaczopany, C.S.I.R.O., Canberra).

10. Argentina

The following is a quotation from the letter from Prof. Dr. Brücher-Erbach to FAO of 17 October 1957:-

"As you may have seen from my publications, part of which appeared in Der Züchter\* during the last three years, northern Argentina is the region of origin of beans (Phaseolus aborigineus), potatoes (Solanum vernei), groundnuts (Arachis monticola Krapovickas and Rigone) and pumpkins (Maxima group: from Cucurbita andreana); other crop plants such as Capsicum, Batate, Fragaria, etc., at least have close relatives here. The genes for resistance found in the wild potatoes of Argentina are of capital importance in current work for the improvement of the cultivated varieties; during the last few years, genes for resistance to Heterodera rostochiensis, Leptinotarsa decemlineata, virus Y, virus X, and to frost, were found in the material I had collected. The collection is to be available to all interested institutes; the German Ibero-America Foundation in Hamburg, in co-operation with the Humboldt Foundation and Research Group in Mendoza (where a large part of the collection has been grown for some years at my Institute and College), intends to create an "Instituto Humboldt" which is to be responsible for the exchange of plant material, besides other duties."

FAO will maintain contact with Prof. Brücher-Erbach with regard to the developments in Argentina to which he refers.

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\*BRUCHER, H. 1954. Cytologische und ökologische Beobachtungen an nord-argentinischen Solanum-Arten der Section Tuberarium. Der Züchter, Vol. 24, pp.281-95.

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1956. Kritische Betrachtungen zur Nomenklatur argentinischer Wildkartoffeln. I. Die Serie Commersoniana. Der Züchter, Vol. 26, pp.97-106.

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1956. Critical observations on the taxonomy of Argentine wild potatoes. II. Solanum vernei Bitt. and Wittm. and its synonym S. Ballsii Hawkes. Anales Depto. Investigaciones Cientificas, Serie Botanica, Vol. 2, pp.1-7.

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1957. Kritische Betrachtungen zur Nomenklatur argentinischer Wildkartoffeln. III. Die Serie Cuneolata. Der Züchter, Vol. 27, pp.77-80.

11. Oxford and Cambridge expedition to Latin America

Seven members of the third Oxford and Cambridge expedition left London on 22 August 1957 for a 14-month tour of South America, the main object being botanical research. The expedition was to land in Georgetown, British Guiana, and begin work in the Rupununi savannah grasslands, turning later to the Matto Grosso savannah to the north and south of the Amazon Basin. After spending 10 months in this region, the expedition plans to drive to Rio de Janeiro, Buenos Aires, Santiago, and up the west coast of South America to Caracas, Venezuela. The expedition expects to cover about 24,000 miles by October 1958.

12. Italy

Preliminary discussions have been held in FAO with Dr. O. Bonfiglioli with regard to the proposal of the Ente Nazionale delle Sementi Elette, Milan, to construct a germ plasm bank on land which has been acquired between Milan and Lodi.

13. Polyploid types of wild and cultivated oats

Mr. D.J. Griffiths, Officer in Charge, Cereal Breeding Department, Welsh Plant Breeding Station, Aberystwyth, wishes to have small seed samples of as many diploid and tetraploid types as possible of Avena, both wild and cultivated, from the Mediterranean and Middle East regions. These types are required for producing new synthetic hexaploid forms in an attempt to elucidate what genomes have gone into the cultivated and wild hexaploids that are being found today. Considerable progress has been made in finding one or two of the genomes but there is a third which is still missing and it may be either a diploid or a tetraploid.

14. Seeds of legumes for Senegal

Dr. F. Bouffil, Director, Centre de Recherches Agronomiques, Bambe, Senegal, has asked FAO to assist in obtaining seeds of several species of legumes for use in their hybridization work. Requests have already been sent to specialists in different parts of the world who should be able to help, but the request is included in this Newsletter in the hope that other specialists who can provide assistance will write either direct to Dr. Bouffil or through FAO. The requirements are:-

- (1) Varieties of Vigna sinensis or V. anguiculata which are resistant to Curculionides, which in Senegal cause serious damage.
- (2) Cultivated or wild varieties of Phaseolus acutifolius, (Tepary bean) from Mexico.
- (3) Cultivated or wild varieties of Dolichos lablab, particularly from the supposed centre of origin of this species in Ethiopia.

## 15. Japan

Seed samples of authenticated strains of grasses and clovers from homoclimates of Japan in other parts of the world are urgently required to support the intensive program of grassland and fodder development which is in progress in that country. Very extensive seeding of pastures will be necessary in order to meet the planned increase in the dairy cattle population from 500,000 to 4,000,000, with similar increases in other types of livestock\*. In order that the grassland specialists may establish varietal trials as soon as possible, all those in a position to supply samples of pasture, pasture/hay or hay types of the humid temperate grasses and clovers are asked to send these to Mr. M. Kanematsu, Grassland Improvement Section, Livestock Bureau, Ministry of Agriculture and Forestry, Tokyo, Japan, preferably through the nearest Japanese Embassy or Consulate. The Japanese authorities will have to depend primarily on imported seeds of grasses and clovers for some 10 or 15 years.

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\* WHYTE, R.O. 1958. International Development of Grazing and Fodder Resources. III. Japan. J. Brit. Grassl. Soc., March (in the press).

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## 16. Conclusion

The above items represent the type of information and requests for seed which FAO can include in Plant Introduction Newsletters for issue at irregular intervals. These Newsletters will be distributed in the first place to those specialists who have assisted FAO in building up this new project and to many other plant breeders and agronomists who are known to be interested in the general subject. If these correspondents collaborate with FAO in supplying information of the above type for inclusion in the Plant Introduction Newsletters, it is believed that it should be possible to make this part of FAO's project in promoting international collaboration in plant exploration, collection and introduction fruitful to all concerned.

All correspondence with regard to the project in general should be addressed to: Dr. R.O. Whyte, Plant Production Branch, Agriculture Division, FAO, Rome, Italy. It is regretted that this Newsletter is available only in English. Those wishing to be included on the mailing list for further issues of these Newsletters are requested to inform the above.